**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

**MM Docket No. 87-268**

In the Matter of

Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service

**SECOND FURTHER NOTICE OF PROPOSED RULE MAKING**

**Adopted: July 16, 1992; Released: August 14, 1992**

**Comment Date: October 13, 1992**
**Reply Comment Date: November 12, 1992**

By the Commission:

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## INTRODUCTION

1. By this action, the Commission is addressing issues relating to the development of channel allotments for advanced television (ATV) service.[1] The Commission is presenting proposals for the policies, procedures and technical criteria to be used in allotting channels for advanced television (ATV) service. Included in this action is a "draft" proposal for an ATV Table of Allotments. The goal of this allotment effort is to provide a 6 MHz ATV channel for each existing broadcast station in a manner that will maximize the coverage of ATV stations, while at the same time taking into account interference to existing NTSC stations and between ATV stations. This is the sixth in a series of Commission actions leading to the implementation of ATV service for the American public.[2]

[1] "ATV" is any television technology that provides improved audio and video quality or enhances the existing NTSC television broadcast system. The existing television service is provided through the "NTSC" system. This system was developed by, and named for, the National Television Systems Committee, an industry group first established in 1940 to develop television broadcast standards. "HDTV" systems are ATV technologies that aim to offer approximately twice the vertical and horizontal resolution of the NTSC system, picture quality approaching that of 35 mm film, and audio quality equal to that of compact discs.

[2] *See Notice of Inquiry*, 2 FCC Rcd 5125 (1987); *Tentative Decision and Further Notice of Inquiry*, 3 FCC Rcd 6520 (1988); *First Report and Order*, 5 FCC Rcd 5627 (1990); *Notice of Proposed Rule Making*, 6 FCC Rcd 7024 (1991); and, *Second Report and Order/Further Notice of Proposed Rule Making*, adopted April 9, 1992, 7 FCC Rcd 3340 (1992).

## BACKGROUND

2. On April 9, 1992, the Commission adopted a *Second Report and Order/Further Notice of Proposed Rule Making (Order/FNPRM)* in this proceeding.[3] In that action, we adopted policies and rules regarding a number of legal and policy issues associated with the initial implementation of ATV service by existing TV broadcasters and sought comment on proposals regarding other ATV legal and policy implementation issues

3. In the *Order/FNPRM*, we, *inter alia*, determined that ATV represents a major advance in television technology, not the start of a new and separate video service.[4] We also found that existing broadcasters possess the know-how and experience to implement ATV swiftly and efficiently. We further recognized the value of the service provided by the existing broadcast television industry and its benefits to the public. For these and other reasons, we therefore concluded that broadcasters should have an opportunity to implement ATV and presented a regulatory approach for that implementation.[5] This plan consists of a transition program in which broadcasters will maintain service to existing NTSC receivers until ATV becomes, and is designated as, the prevalent television medium. To facilitate the transition, broadcasters will temporarily be provided with a second channel to allow them to operate both ATV and NTSC services. At the end of the transition period broadcasters will relinquish one of their channels.[6] We described the channel that the broadcasters would keep at the end of the transition period as the "conversion channel" and the channel to be relinquished as the "reversion channel".[7]

4. With regard to ATV allotment policy, in the *Order/FNPRM* we agreed with commenting parties that it is essential that an ATV allotment/assignment process be in place at the time the ATV standard is adopted and that the policies and methodology for this process be defined as soon as possible. The Commission proposed that negotiations should be an integral part of the ATV allotment and assignment process; and that, at the time it proposes a "final" ATV Table of Allotments, broadcasters would be provided a fixed period of time to negotiate and submit plans for pairing NTSC and ATV channels.[8] It further proposed to permit both commercial and non-commercial stations to participate in such negotiations. If there are markets remaining where broadcasters are unable to agree on a pairing plan, the Commission proposed that channels in those markets would be passigned on a first-come, first-serve basis.[9]

5. In the *Order/FNPRM*, the Commission deferred action on a number of issues relating to ATV allotments that were raised by parties filing comments in response to the *Notice of Proposed Rule Making (Notice)* that preceded the *Order/FNPRM*. The Commission stated that it intended to address those and all other, ATV allotment issues in another Further Notice of Proposed Rule Making, *i.e.*, the instant action.[10]

## DISCUSSION

6. This Further Notice is the first in the planned series of actions leading to the adoption of a final ATV Table of Allotments. The Commission will consider information from the comments and other sources, such as data from the testing of the proponents' technical systems, in finalizing its ATV allotment policies and preparing its proposal for a "final" ATV Table. Interested parties are also advised that we intend to consider alternative proposals for the underlying principles set forth herein that will guide the development of the ATV Table, and request interested parties to submit specific proposals for such alternative approaches.

7. The purpose of the draft ATV Table of Allotments proposed herein is to aid broadcasters and other interested parties in focusing their comments on the policy proposals presented below. Interested parties are asked to examine this Table in formulating comments and alternative proposals regarding ATV allotment and assignment policy issues. We emphasize that the final ATV Table may change significantly from the Table proposed herein due to factors such as changes to our ATV allotment policy proposals, the final performance characteristics of the ATV technical system, and the results of our international coordination of ATV allotments with Canada and Mexico. We therefore do not seek comments on the specific conversion channel allotments indicated on the draft Table attached to this Further Notice. Rather, it is our tentative plan, at the time we propose the final ATV Table, to provide opportunity for comment on individual channel allotments as well as a specified period of time for broadcasters to negotiate and submit allotment/pairing plans for ATV.[11] Any such negotiated plans would then be included, to the extent practicable, in the final ATV Table that we adopt.

## ALLOTMENT POLICY

### ATV Allotment Objectives

8. In order to guide the ATV allotment process, we are proposing four broad allotment objectives. These objectives are discussed below in the order of their priority. The application of these objectives to the allotment process is discussed more fully in the section on Allotment Methodology.

9. *Full Accommodation.* In the *Order/FNPRM*, the Commission decided that all existing TV broadcasters will be eligible for ATV channels.[12] Parties commenting in response to the earlier *Notice* support providing sufficient

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[3] *See Order/FNPRM, supra.*

[4] *Id.*, at paras. 4-6.

[5] *Id.*

[6] *Id.*, at paras. 50-57.

[7] *Id.*, at para. 7.

[8] To the extent possible, we would take into account any negotiated agreements made nationwide or within markets in preparing the "final" Table of Allotments that is adopted.

[9] In the case of applications filed at the same time, we would apply a "random ranking" procedure that would provide the top-ranked applicant with first choice of the available channels, the second-ranked with the next choice and so on.

[10] *Id.*, at para. 32.

[11] Comments on this proposed approach were recently filed in response to the *Order/NPRM*.

[12] In particular, the Commission decided that parties eligible for ATV channels in the initial assignment period would include all full service TV broadcast station licensees, permittees authorized as of the date of adoption of the Notice and all parties with applications for a construction permit on file as of

ATV channel allotments to accommodate all eligible broadcasters. For example, the Advanced Television Systems Committee (ATSC) and the Joint Broadcasters[13] state that it is essential that all existing broadcasters be able to participate in ATV. ATSC endorses a Commission plan to amend the Table of Allotments to provide ATV conversion channels for each local community now served by a local television station.

10. We agree that there should be sufficient ATV allotments to accommodate all eligible broadcasters. This approach would ensure that all broadcasters have an opportunity to participate fully in the transition to the new television technology. This would benefit the public by preserving the service of all the existing TV broadcast stations. In view of the expected expense of implementing ATV service and the need to develop associated programming and production resources, we also believe it is important to minimize the impact of the implementation of ATV on other aspects of the industry's structure. Accordingly, we are proposing that our primary allotment objective be to accommodate all eligible broadcasting entities.

11. *ATV Service Areas.* In comments responding to the Notice, the Joint Broadcasters and other broadcast industry representatives submit that the Commission should base channel pairings, to the greatest extent feasible, on technical and engineering considerations that optimize ATV allotments and maximize service to broadcasters' audiences.[14] The Commission's Advisory Committee on Advanced Television Service (Advisory Committee) takes a similar position in its "Fifth Interim Report."[15] The Joint Broadcasters further submit that the channels necessary for ATV should not be obtained by reducing the size of ATV service areas below that needed to achieve maximum ATV coverage or by creating additional interference to NTSC channels.

12. The Advisory Committee and parties representing a number of broadcast interests, including the Broadcast Caucus, MSTV and others, also suggest an allotment approach that would pair ATV channels with existing NTSC stations based on a "service replication/maximization" plan.[16] Under this approach, the allotment process would attempt to provide ATV coverage areas comparable to existing NTSC coverage areas, taking actual interference into account. Consistent with the comparable coverage objective, the service replication/maximization approach would match ATV channels with existing NTSC channels to create channel pairings/assignments.[17] The goal of this approach would be two-fold: 1) to provide ATV coverage comparable to a station's entire current coverage area and 2) to provide the best correspondence between the size and shape of the proposed ATV channel's coverage area and the station's existing coverage. MSTV argues that the service replication/maximization plan would be "more equitable, more spectrum efficient, more supportive of the rationale that ATV is an enhancement of existing service and more likely to achieve simulcast service" than the

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the date of adoption of the *Notice*, *i.e.*, October 24, 1991, who are ultimately awarded full-service broadcast station licenses. The Commission further stated that it would allow others to request, *e.g.*, petition for, ATV allotments in communities where there are channels available in addition to those needed for initially eligible parties. *See Order/FNPRM*, *supra*, at paras. 6-7.

[13] The Joint Broadcasters are a group of 96 broadcast organizations representing licensees, networks and industry associations that filed joint comments.

[14] *See also* Letter to FCC Chairman Alfred C. Sikes, March 10, 1992, signed by the Association of Maximum Service Television, Inc., the Association of America's Public Television Stations, the Association of Independent Television Stations, Inc., CBS, Inc., Capital Cities/ABC, Inc., Fox TV Stations, the National Association of Broadcasters, National Broadcasting Co. and the Public Broadcasting Service (*Broadcast Representatives Letter*).

[15] *See* "Fifth Interim Report of the Spectrum Utilization and Alternatives Working Party of the Planning Subcommittee of the Advisory Committee on Advanced Television Service" ("Fifth Interim Report of the Spectrum Alternatives Working Party"), February 3, 1992.

[16] This approach is described in a letter to the Chairman of the FCC from its supporting parties dated March 10, 1992. The letter proposes the following specific allotment/assignment principles:

> 1) The allotment/assignment process should start by calculating NTSC coverage based on existing facilities (height and power) and existing sites and taking interference into account, as defined in the Commission's rules.
>
> 2) Without causing new interference to existing NTSC service as defined by the Commission's rules, stations would then be assigned ATV channels that would provide coverage areas no smaller than their current NTSC coverage areas.
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> 3) Where possible (that is, without causing new interference to existing NTSC service, as defined by the Commission's rules, or preventing other existing stations from achieving ATV coverage comparable to their existing NTSC coverage), existing stations with smaller NTSC coverage areas would be assigned ATV channels that could provide larger coverage areas up to the coverage area of the largest NTSC station in the market.
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> 4) Where spectrum and interference considerations permit, ATV service areas would be allowed to expand up to the maximum NTSC noise-limited coverage. This could be accomplished by the Commission's establishing maximum power and height limitation for ATV facilities just as it does for NTSC facilities.
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> 5) Proposed ATV channels would be paired with NTSC channels by seeking the best overall "match" between the NTSC coverage area of existing [stations] and the coverage of the proposed ATV channels to be allotted to each market.

The Advisory Committee indicates its support for this approach in its "Fifth Interim Report of the Spectrum Utilization and Alternatives Working Party," *supra*.

[17] The Advisory Committee, specifically the Working Party on Spectrum Utilization and Alternatives (PS/WP3), is developing an ATV Allotment Table proposal generally on the basis of the service replication/maximization approach. PS/WP-3 indicates that it has developed models and computer software to evaluate the coverage and service areas of NTSC and ATV stations under each of the candidate ATV systems. This software will also be used to fashion alternative allotment tables. PS/WP3 indicates that it plans to have a Table by the Fall of 1992. *See* Broadcast Representatives Letter, *supra*, and the "Fifth Interim Report of the Advisory Committee on Advanced Television Service," Advisory Committee, March 24, 1992.

first-come/first-served, random selection procedures proposed for determining ATV assignments in the *Order/FNPRM*.[18]

13. On the other hand, representatives of public television stations (Public Television),[19] Fox, Inc. and others submit that, rather than allotting ATV channels based on current NTSC coverage, the Commission should attempt to improve the coverage areas of UHF stations and end the UHF/VHF disparity. These parties propose that the allotment plan be guided by the principle of equalizing ATV coverage within markets.

14. We agree with the commenting parties that it is important to allot conversion channels in a manner that will maximize the service areas of ATV stations to the extent possible. We are concerned, however, that the service replication/maximization objective suggested by the Advisory Committee and others may not be attainable. In particular, we tentatively believe it is likely that a significant number of cases would be encountered in which an acceptable degree of service replication could not be obtained and that all licensees might not be satisfied with the allotments and assignments the plan would produce.[20]

15. We therefore are proposing an approach that would maximize the service areas of all ATV allotments. Along with a general maximization of service objective, we further believe it is important to enable ATV stations to serve geographic areas that encompass their communities of license and surrounding market areas. For this reason, we also intend to establish a minimum ATV service area objective. We believe that, at a minimum, ATV stations should have the capability to provide service to an area within a radius of 85-90 km (about 55 miles) of their transmitter sites.[21] We therefore are proposing that the second primary objective of the ATV allotment process be to attempt to maximize the expected service areas of new ATV stations and to ensure that all such stations are able to meet an 85-90 km minimum service area objective.

16. We also request comment on the service replication/maximization concepts described above. In particular, interested parties are asked to address how, under such a plan, choices regarding allotments and service areas should be made across adjacent markets and densely occupied regions where the choice of channels in one market affects the choice of channels in markets located beyond the minimum spacing requirements through a "daisy ch[illegible] process. We further request comment on how NTSC interference-limited coverage should be defined with regard to both the existing NTSC service and the new ATV service, taking into account the fact that many existing stations operate at less than the maximum facilities they could be authorized and could, with a minor modification, increase to the maximum. We emphasize that we plan to provide parties an opportunity to develop and work out allotment and assignment matters with other broadcasters in the negotiation period that will be provided after we propose a final ATV Table.

17. *Use of UHF Channels.* It is our preliminary view that the implementation of ATV service would be enhanced if all ATV operations were located in the same area of the spectrum, in particular, the UHF band. This would help to simplify ATV equipment design and to reduce technical disparities between stations. For example, use of a single contiguous band would simplify the design of TV receivers and antennas by removing the need for tuning signals in more than one band. These simplifications could be expected to lower the cost of consumer TV receiver system equipment.

18. Our ATV allotment studies to date indicate that the majority of ATV conversion channels will have to be allotted from the UHF band.[22] These studies further indicate that only a few VHF channels could be made available in each of the large, congested markets. Generally, we believe the UHF band will prove quite suitable for ATV service. The design of the ATV technical standard is expected to allow ATV UHF stations to serve the same geographic area as NTSC UHF stations, but with substantially less power.[23] This will result in considerable savings in power costs for ATV UHF operations. In addition, the transmission properties of ATV signals and the use of signal processing in ATV receivers should generally render the propagation differences between UHF and VHF frequencies less important. Further, ATV signals are expected to be much less susceptible to multipath and flutter than NTSC signals. We therefore are optimistic that the disparity that currently exists between the UHF and VHF bands will be much less significant for ATV service. In view of these considerations, we propose, as our third ATV allotment objective, to make ATV allotments exclusively to the UHF band.[24]

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[18] *See* Letter to the FCC from MSTV, dated June 2, 1992.

[19] The Association of America's Public Television Stations, the Corporation for Public Broadcasting and the Public Broadcasting Service submitted joint comments.

[20] We expressed these same concerns with regard to the basic concept of the service replication/maximization approach in the *Order/FNPRM*. *See Order/FNPRM, supra*, at footnote 91.

[21] The service distances typical of existing NTSC stations range from about 85-105 km (55-65 miles). Some stations, however, have a service distance as short as 30 km (20 miles) and others have a service distance as long as 125 km (80 miles).

[22] In general, these allotments would be made available through use of the channels not now available due to the UHF taboo restrictions. *See* 47 C.F.R. Sections 73.610(d) and 73.698; *see also* "Interim Report: Estimate of the Availability of Spectrum for Advanced Television (ATV) in the Existing Broadcast Television Bands," OET Technical Memorandum, FCC/OET TM88-1, August 1988 and, "Interim Report: Further Studies on the Availability of Spectrum for Advanced Television," OET Technical Memorandum, FCC/OET TM89-1, December 1989. Also, our staff recently generated trial ATV Tables that attempted to allot channels first to VHF frequencies wherever possible and then to UHF frequencies. These trial ATV Tables indicated that, at most, less than one-half of all stations could be accommodated on VHF channels, whereas almost all existing stations could be accommodated on UHF channels. These trial Tables have been placed in the record of this proceeding.

[23] The digital ATV system proponents project that ATV stations will operate with approximately 10 dB less average power than an NTSC station to serve the same geographic area.

[24] In the *Order/FNPRM*, we set forth our plan for implementing ATV service. As part of this plan, we proposed a transition scheme and emphasized that we will reclaim one of the two channels that broadcasters will use during the transition. *See Order/FNPRM, supra*, at para. 50. Our proposal to allot ATV channels only to UHF frequencies would leave the VHF TV channels vacant after the transition to ATV is completed. This would make that band available for new radiofrequency services. Consistent with this proposal, we would not create [illegible] ATV allotments on VHF channels after the initial ATV Table is adopted. In discussing our position on switching frequencies between ATV and NTSC channels in the *Order/FNPRM*, we

19. An examination of the proposed ATV Table indicates that very few, *i.e.*, 17, ATV VHF allotments would be needed to achieve full accommodation. We also observe that the few ATV VHF allotments included in this Table are located in areas where there are one or more existing NTSC stations on UHF channels that meet the proposed ATV-to-ATV spacing requirements. We therefore believe that ultimately it will be possible to provide a UHF channel for ATV operation by all of the existing stations that would be assigned ATV VHF allotments. We are proposing special transition provisions to ease the change to ATV for those stations. First, we propose to allow existing NTSC UHF stations assigned ATV VHF channels to switch their NTSC channels to ATV operation before the conversion date.[25] Second, in cases of existing VHF stations or where a direct switch from NTSC to ATV operation by a UHF station otherwise might not be feasible, we propose to make an additional, suitable UHF channel available for the station's ATV operation from the vacated NTSC channels in its area once the conversion occurs.[26] Application for such specially created channels would, of course, be limited for a certain period to existing stations assigned ATV VHF channels in the market. We anticipate that the specific channels to be made available under this policy would be finalized at least two years before the conversion date, so that the affected stations would have adequate time to construct their ATV station and prepare for its operation before the conversion occurs. We request comment on this approach for completing the transition to an all ATV UHF service. Interested parties are also asked to address the point at which early conversion of existing UHF stations to ATV operation should be allowed to occur and to submit proposals for other ways to ease the conversion of ATV VHF stations to UHF channels.

20. We recognize that the all-UHF approach would represent an important change for the television industry. In particular, it would tend to equalize the expected coverage areas and reception characteristics of all stations. Location of all TV stations in a single band could also be expected to reduce or eliminate differences in viewers' perception of stations that might be based on whether stations operate on UHF or VHF channels. Such a change also could affect the current market position of the existing VHF stations. Nonetheless, we tentatively believe the changes in the industry structure that would result from an all UHF service would be beneficial for the public. We request comment on this proposal and its expected impact on the broadcast television industry and television viewers. Alternatively, we seek comment on whether we should maintain some UHF/VHF distinction.

21. *ATV Allotment Preference.* We propose, as our final objective, to give a relative preference to new ATV operations over NTSC operations in the allotment process.[27] In most instances, the choice of channels for an ATV allotment will involve consideration of other nearby ATV allotments and existing NTSC stations. Because ATV is proposed to be the medium for television service in the future, we believe ATV service should be preferred over existing NTSC service. That is, where a choice must be made between providing greater service area for a new ATV allotment or minimizing interference to an existing NTSC allotment, we are proposing to choose in favor of the ATV allotment. We request comment on this proposed objective.

**Expected Performance of ATV Systems**

22. Our earlier ATV allotment studies indicated that in order to accommodate all existing stations with an ATV channel it would be necessary to locate some co-channel ATV operations at distances to other NTSC and other ATV stations as close as 160 km (100 miles), with perhaps a very few stations at slightly closer spacings. These studies also indicated that ATV to NTSC cochannel spacing is by far the dominant consideration in achieving full accommodation.[28] Our earlier studies further indicated that we will need to eliminate or significantly alter the existing adjacent channel and UHF taboo channel spacing requirements. In particular, these studies indicated that to achieve full accommodation it will be necessary to co-locate or reduce spacings between adjacent channels in some instances and to eliminate many of the UHF taboo channels. FCC staff studies of NTSC receiver performance and spectrum availability also indicate that it appears possible to use the UHF taboo channels for ATV service.[29]

23. Understanding these considerations, the proponents of the five HDTV systems being evaluated by the Advisory Committee as candidates for selection as the ATV technical standard have designed their systems to operate at the

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indicated that we would wait until ATV implementation was underway before deciding whether to require or permit broadcasters to switch frequencies. *See Order/FNPRM, supra,* at paras. 56 and 57. Based on the information we have on the expected performance of the ATV technical system and the practical reasons discussed above, we now believe the most appropriate course is to propose to implement ATV as an all UHF service. Under this plan, broadcasters now operating on VHF channels would not be able eventually to switch their ATV and NTSC frequencies. However, we still intend to consider, at an appropriate point in the future, whether to permit broadcasters whose NTSC operations are on UHF channels to switch their ATV and NTSC operations.

[25] In the *Order/FNPRM,* we tentatively concluded that we should establish a date for conversion to ATV service that is 15 years from the date of adoption of an ATV system or a final ATV Table of Allotments is effective, whichever is later. *See Order/FNPRM,* at paras. 52-54.

[26] We anticipate that the inclusion of VHF tuners in ATV receivers will not be a burden during the transition. The market will likely offer a number of models of receivers and converter devices that have the ability to receive and decode both ATV channels and all UHF and VHF NTSC signals.

[27] This preference is intended for allotment purposes only. We would take into account protection of any affected existing NTSC service in actual ATV operations during the transition period. For example, during the transition period we could limit the power of certain ATV stations so that existing NTSC service is not affected. After the conversion date, when NTSC operations cease, the affected ATV stations would be permitted to increase their power.

[28] *See* "Interim Report: Estimate of the Availability of Spectrum for Advanced Television (ATV) in the Existing Broadcast Television Bands," *supra;* and, "Interim Report: Further Studies on the Availability of Spectrum for Advanced Television," *supra.*

[29] *See* "Analyses of UHF TV Receiver Interference Immunities Considering Advanced Television Service," FCC/OET TM88-2 (August 1988); *see also* "Interim Report: Estimate of the Availability of Spectrum for Advanced Television (ATV) in the Existing Broadcast Television Bands," *supra.*

necessarily closer spacings.[30] The proponents claim that their systems can provide service at 160-184 km (100-115 mile) co-channel station-to-station distances. At these spacings, ATV stations would be able to provide service that extends nearly as far as the service of co-channel NTSC stations located at the current minimum spacings.[31] The system proponents also indicate that their systems can provide this range of service at the closer spacings while causing no more interference to existing NTSC service than is caused by another NTSC station operating at the current minimum spacings for co-channel NTSC UHF stations. These estimates generally are based on system-independent service area planning factors consistent with those recommended by the Advisory Committee.[32]

24. We therefore expect that the technical system chosen as the ATV standard will be able to provide satisfactory service and interference performance at the co-channel spacings we will need to employ in allotting ATV channels. The actual performance capabilities of the proponents' systems are being evaluated by the Advisory Committee.[33] The information from these evaluations will be considered in developing the final ATV Table.

**Allotment Methodology and Approach**

25. In this section we address the specific methodology and criteria to be used in allotting ATV channels to meet the broad objectives presented above. Interested parties are invited to comment on these proposals and to suggest alternatives.

26. *Use of Spacing Standards.* The Advisory Committee, the Joint Broadcasters and others support use of minimum spacing standards for the allotment of ATV channels. This approach is similar to the approach currently used with NTSC TV and FM radio allotments.[34]

27. We concur with this view and therefore propose to allot ATV channels using geographical spacing criteria in the same manner that we currently allot NTSC TV channels and FM radio channels. This traditional approach has proved to be an efficient, effective means for managing interference between stations and the implementation of new allotments and assignments. Moreover, the geographical spacing approach allows considerable flexibility in the specification of station operating parameters such as power and antenna height in meeting coverage objectives. To maximize the expected coverage areas of ATV stations, our allotment decisions will attempt to optimize the distances between new ATV allotments and between new ATV allotments and existing NTSC stations.

28. *Spacing Proposals.* Consistent with our broad ATV objectives, we are proposing minimum spacing standards that we believe will ensure that ATV stations are able to serve areas comparable to NTSC UHF stations, *i.e.*, areas within 85-90 km of their transmitters. As is the case for NTSC service, the most difficult area for locating ATV allotments is in Zone I, particularly the northeast corridor of the United States. The projected ATV system performance information indicates that our ATV service goals can be achieved through the following minimum spacings:

1) ATV to ATV co-chan. stations- 200 km (125 miles)

2) ATV to ATV adj-chan. stations- More than 88 km (55 miles) or less than 8 km (5 miles)

3) ATV to NTSC co-chan. stations- 184 km (115 miles)

4) ATV to NTSC adj-chan. stations- More than 88 km (55 miles) or less than 8 km (5 miles)

Accordingly, we propose to establish the above criteria as the minimum spacing requirements for ATV stations. Consistent with our goal of maximizing the coverage potential of the ATV allotments, we will endeavor to separate co-channel stations as far as possible, up to a distance of 250 km (155 miles).[35] We believe that this approach will balance the overall quality, *e.g.*, expected coverage areas, of the allotments in adjacent markets. We recognize that additional data on spacing needs will be forthcoming from the Advisory Committee's testing process and we will consider that data when it becomes available.

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[30] There currently are five technical systems competing to be chosen as the ATV standard: 1) "Narrow-MUSE," from the NHK; 2) "DigiCipher," from General Instrument Corp./American Television Alliance (ATVA); 3) "Digital Spectrum Compatible HDTV" (DSC-HDTV), from Zenith and AT&T; 4) "Advanced Digital-High Definition Television" (AD-HDTV), from the Advanced Television Research Consortium (ATRC); and, 5) "Channel Compatible DigiCipher," from the Massachusetts Institute of Technology/ATVA. A sixth, EDTV system, the ATRC's "Advanced Compatible Television" (ACTV) has been withdrawn from consideration as a candidate for the ATV standard by the proponent. *See Order/FNPRM, supra,* at footnote 3.

[31] A chart showing the proponents' claims of system performance is presented in Appendix A.

[32] The Advisory Committee's Working Party on Spectrum Utilization and Alternatives, PS/WP3, in its "Fifth Interim Report," recommends a series of system independent planning factors for use in evaluating ATV service areas. *See* "Fifth Interim Report of the Spectrum Utilization and Alternatives Working Party of the Planning Subcommittee of the Advisory Committee on Advanced Television Service," *supra.* These planning factors are presented in Appendix B.

[33] In analyzing the service area capabilities of the proponents' systems, one must consider the performance capabilities of the individual system being tested and the planning factors common to all of the systems discussed above. The interference factors to be considered include: 1) the signal-to-noise ratio (S/N) defining the outer limit of service; 2) co-channel desired-to-undesired interference ratios (D/U) for ATV-to-ATV, ATV-to-NTSC and NTSC-to-ATV signals; 3) the upper and lower adjacent channel D/U ratios for these same signal relationships; and, 4) the thresholds of visibility for UHF taboo channels. The first step in the analysis is to determine the power and antenna height combination that causes no more interference intrusion into the service area of a neighboring NTSC station at the minimum spacing distances than would another NTSC station similarly situated under the current rules. The expected noise-free and interference-free service areas of ATV stations can then be determined.

[34] *See* 47 C.F.R. Sections 73.610 and 73.207.

[35] Beyond 250 km (155 miles), the benefits of additional co-channel distance between ATV stations and between ATV and NTSC stations become less important. We note, however, that 80 percent of the allotments in our proposed ATV Table are located such that the nearest co-channel allotment is more than 250 km away.

The minimum spacings needed between stations on adjacent channels and on channels separated by the UHF taboo relationships will be affected by the selectivity of the tuners used in consumer ATV receivers.[36] We therefore intend to pay careful attention to the Advisory Committee's adjacent and taboo channel testing and the likelihood of building economical tuners to perform to, or improve upon, those results in developing the final table. Based on our own earlier receiver studies, we believe that most of the UHF taboos can be largely ignored in allotting ATV channels. Accordingly, at this time we are not proposing spacing rules to protect for UHF taboo effects.[37] Interested parties are requested to address the relationship between economical tuner designs and acceptable spacings between stations on adjacent and UHF taboo channels and the possible need for maintaining specific taboos.

30. We request comment on the above spacing proposals. Parties suggesting alternative spacing requirements are asked to submit data and analyses that support their proposals. Commenting parties are also invited to examine the forthcoming Advisory Committee data and comment on its implications for minimum spacing requirements. We also request comment on whether it is necessary to specify alternative minimum spacing requirements for Zones II and III, as we do for NTSC service.

31. *Short-spaced Allotments.* Because our primary objective is full accommodation of all existing television stations, our first concern will be spacing stations at distances necessary to provide channels for all existing stations in the initial ATV Table. In implementing this priority with our objective to maximize service areas, our approach will be to attempt, first, to allot channels at distances that meet or exceed the minimum spacing requirements stated above. However, in order to accommodate all existing stations with ATV channels, it will be necessary to locate some allotments at co-channel spacings that are closer than the minimum standards.[38] In fact, it will be necessary to locate some co-channel ATV and NTSC stations as close as 156 km (97 miles) apart.[39] The service range of such short-spaced stations likely will be reduced in the direction of a line between the two stations. Nonetheless, we believe the benefits of providing full accommodation of all existing stations warrant the relatively small loss in total service area that will occur in such cases. We intend to make every effort to minimize the use of short-spacing and its effect on neighboring stations. We also note from the ATV Table proposed herein that most of the short-spaced situations will be between ATV and NTSC stations.[40] As the ATV-NTSC short-spacings will be present only during the transition period, most of the effects on service areas from short spacings will not be present after that time.

32. We also propose to allow short-spaced allotments only during the initial assignment phase for existing stations. Subsequent additions to the ATV Table for stations to be operated by new applicants would be required to comply with the minimum spacing requirements. After the two-year initial application period, we propose to delete all short-spaced allotments that have not been activated by an eligible broadcaster.[41]

33. *Use of Existing Sites.* The Advisory Committee and the majority of broadcasters take the position that ATV channels should be allotted on the basis of current transmitter sites, rather than the reference points of communities.[42] The Joint Broadcasters believe this approach would help maximize the coverage areas of ATV stations, while minimizing potential interference to other, including secondary, stations. These parties further state that deviations in the service areas that are possible within the group of channels available to allot to a given community argue strongly for pairing on the basis of existing transmitters sites. Joint Broadcasters also submit that most stations will find it cheaper and easier to co-locate their ATV transmitters at their existing transmitter sites, and that this would reduce implementation expense and expedite the introduction of ATV service. They acknowledge, however, that some stations will have tower loading problems, at least in the short run, and that others may find their existing sites relatively inferior. Great American Television and Radio Company, Inc. (Great American) requests that the Commission establish procedures that would permit stations, for good cause, to request that their allotment be located at a site different from that of their existing transmitter. Great American points out that in some cases the licensee may not be able to locate a second transmitter and antenna at an existing site or may have identified a preferred alternative site.

34. du Treil, Lundin and Rackley, Inc. (dLR), the Telemundo Group, Inc. (Telemundo) and others ask the Commission to consider clustering ATV allotments at one location in a community to facilitate a common antenna location for stations and thus reduce transmission costs. Telemundo also states that co-location of the ATV operations in an area would eliminate UHF taboo concerns. Bradenton Broadcast Television Company, Inc. (Bradenton) urges that channels be allotted on a "whole market"

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[36] We have very little analytical data on the expected performance of the proponents' systems with regard to adjacent channel and UHF taboo channel interference. However, some of those system features that will minimize ATV to NTSC co-channel interference would also be expected to minimize ATV to NTSC adjacent channel and taboo channel interference.

[37] Our allotment software allows for the incorporation of taboo protections.

[38] As indicated below in the discussion of proposed ATV Table, approximately six percent of the new ATV allotments would not meet the proposed spacing requirements. Consistent with our broad objectives, we would give a preference to future ATV service over NTSC service. For example, if, in order to provide full accommodation it is necessary to violate our minimum spacing proposals, we would choose to do so in the ATV-to-NTSC spacings rather than between ATV allotments.

[39] The closest spacings will be in areas such as New York City and Los Angeles where the population of existing stations is most dense. Section II of Appendix D provides more information about where close spacings are likely to be located.

[40] The ATV Table of Allotments presented herein specifies only 14 instances of short-spaced co-channel ATV to ATV spacings.

[41] As decided in the *Order/FNPRM*, eligible broadcasters will have two years to apply for ATV allotments, after which the ATV allotments will be available to any qualified applicant. The ATV application time period will begin to run on the date that a Report and Order adopting the ATV Table of Allotments or selecting an ATV system becomes effective, whichever is later. *See Order/FNPRM, supra*, at paras. 22-25.

[42] The Advisory Committee's position is stated in its "Fifth Interim Report of the Spectrum Utilization and Alternatives Working Party," *supra*.

basis, rather than to the specific communities to which NTSC stations are currently licensed. Bradenton states that this would allow fringe-area stations to compete with the more centrally located stations in their market for the more desirable channels.

35. We agree with those parties who suggest that there are advantages in taking into account existing transmitter locations in the ATV allotment process. Using the locations of the existing transmitters sites as reference points for the initial ATV Table would facilitate more efficient spacing of ATV allotments. It also would ensure that, where otherwise feasible, broadcasters can realize the cost savings from co-locating their NTSC and ATV operations. We disagree with those parties who suggest that all of the channels in a market or community be located at a single site or that channels be allotted on a whole market basis rather than to specific communities. These approaches would reduce allotment flexibility and might tend to limit the number of channels that could be allotted. Moreover, we see no reason to expect that all the stations in a market would generally seek to operate their ATV service from a common location. Accordingly, we propose to allot ATV channels on the basis of current transmitter sites, rather than community reference points. The current NTSC transmitter sites would be used to develop the ATV Table and to determine whether potential ATV allotments meet the proposed minimum separation requirements. We request specific comment regarding any circumstances where it might be desirable to evaluate ATV allotments on the basis of sites other than those occupied by existing TV stations.

36. For purposes of this proposal, we would assume that an existing site location is the area within a three-mile radius of the actual transmitter location. In accordance with our established practice for broadcasting, we propose to permit a licensee to operate its ATV station at a site different from that of its NTSC operation where the alternate sites would meet the proposed ATV minimum spacing requirements and the station would continue to serve its community of license. Such site relocations could include movement to a common local TV transmission site.

**Other Allotment Policy and Process Issues**

37. *Existing Vacant Allotments and New Applications.* dLR submits that all commercial TV allotments that are not currently being used or for which there are no pending applications should be deleted from the existing TV Table of Allotments. dLR also asks the Commission to extend the current freeze on acceptance of applications in the most densely occupied markets.[43] Joint Broadcasters state that the Commission must at some point "freeze" the pool of eligible existing stations and the locations of those stations. They further state that a limited exception to this freeze might be appropriate for new NTSC noncommercial stations in areas not yet receiving noncommercial service. MSTV, in reply comments, submits that the Commission should institute a freeze, *for planning purposes only*, on modifications of existing stations' technical and engineering parameters that could affect the determination of both existing and proposed HDTV coverage and interference areas. Under this suggestion, licensees would, in fact, be allowed to seek modifications that would affect their coverage and interference areas. The Commission would ignore any such changes in its planning work, however. MSTV says the "planning freeze" would allow the Commission to design ATV allotments with a first priority of achieving coverage comparable to NTSC coverage.

38. We see no need to implement dLR's suggestion to delete from the existing TV Table of Allotments all commercial TV allotments that are not currently being used or for which there are no pending applications. It does not appear necessary to eliminate all of the existing vacant NTSC allotments in order to implement our ATV plan. We also see no need to impose a general "freeze" on the pool of NTSC stations eligible for ATV channels or on the locations of existing stations. As noted above, we have already issued an *Order* freezing applications for new stations in the 30 major cities where our earlier studies indicated that a shortage of spectrum for operation of ATV stations might exist.[44] We continue to believe there is adequate spectrum available in markets outside these 30 to accommodate ATV channels. Thus, the existing freeze appears adequate to ensure that spectrum is available for ATV channels. Similarly, we see no purpose in employing MSTV's "planning freeze" with regard to modifications of existing stations. Accordingly, as indicated in the *Order/FNPRM*, we will accept applications for new NTSC stations during the course of the development of the ATV Table and until the end of the initial ATV assignment process.[45]

39. We propose, however, to delete vacant NTSC commercial allotments where necessary to facilitate creation of an ATV allotment. To the extent that it would be necessary to displace specific existing vacant allotments to create an ATV allotment, we would not accept applications for those existing allotments. This policy would become effective at the time we propose the final ATV Table of Allotments.

40. In keeping with our decision in the *Order/FNPRM*, we will attempt to maintain existing vacant noncommercial NTSC allotments and to provide new ATV channels for such allotments.[46] We will eliminate vacant noncommercial allotments only where no feasible alternative exists for allotting ATV channels for eligible broadcasters. We also will provide vacant noncommercial reserved allotments with an ATV channel except where all of the available ATV allotments are needed by existing broadcasters and careful engineering analysis reveals no other practicable alternative.

41. *Low Power and TV Translator Stations.* In the *Order/FNPRM*, we determined that if ATV is to succeed, it will be necessary for new ATV assignments to displace low power TV (LPTV) and TV translator stations to some

[43] In conjunction with the *Notice of Inquiry* in this proceeding, *supra*, the Commission also issued an Order freezing applications for new television stations and requests for new television allotments in the 30 major cities where a shortage of broadcast spectrum might exist for ATV channels. *See Order*, RM-5811, Mimeo No. 4074, released July 17, 1987.

[44] *See Order*, RM-5811, Mimeo No. 4074, released July 17, 1987.

[45] *See Order/FNPRM, supra*, at para. 48.

[46] *See Order/FNPRM, supra*, at paras 33-35.

degree in the major markets. We observed that the impact on low power stations is likely to be less severe in rural areas where there are fewer full-service stations.[47] This determination was based on studies by our staff and the Advisory Committee that indicate there is insufficient spectrum available in the broadcast TV bands to factor in low power displacement considerations in making ATV assignments. We observed that, in fact, it will be a challenge just to provide all full-service licensees with an additional 6 MHz for ATV. We therefore reluctantly concluded that we must continue LPTV and TV translators secondary status vis-a-vis ATV stations. In view of the important benefits that LPTV and TV translators provide to the public, we also took a number of steps to mitigate the likelihood and effects of displacement on low power stations.[48]

42. Consistent with the determinations and actions in the *Order/FNPRM*, the ATV allotment process generally will not attempt to protect low power stations from interference from potential ATV stations.[49] Also, as indicated in the *Order/FNPRM*, some of these stations, particularly those in the more congested areas of the nation, may be required to make changes in their operation, including the possibility of ceasing operation, to avoid interference to ATV stations.

43. *Use of TV Channels 3 and 4.* In its reply comments, MSTV submits that, because Channels 3 and 4 are used as the output frequencies of cable terminal equipment and VCRs, caution should be exercised in allotting both of these channels to the same community. MSTV is concerned that cable terminal equipment and VCRs may be vulnerable to interference from ATV signals operating on the output channels used by this equipment.

44. Although at this time we are proposing to use the UHF frequency band for ATV and the proposed ATV Table does not use TV Channels 3 and 4, we are aware of the potential interference concerns mentioned by MSTV with regard to use of these channels in the same community. In general, we believe the output signal levels of cable terminal devices and VCRs can be expected to be significantly higher than the off-air levels of an ATV signal on the frequency on which this equipment would operate. Moreover, the amplified output signal of cable terminals and VCRs would be coupled by cable directly to the input terminal of a TV receiver's tuner circuit. The interfering ATV signal, on the other hand, would be present only through direct pickup within the TV receiver itself, and therefore would be at significantly lower level of power. An off-air ATV signal is therefore not likely to interfere with the operation of a cable terminal or VCR. Conversely, if the connection between the output of a cable terminal or VCR and a TV receiver is properly shielded, the output signal will not interfere with reception of off-air signals through the VCR, suitably equipped cable terminal or other device for switching program sources. Thus, we believe that Channels 3 and 4 generally can be used for NTSC and ATV operations in the same area without conflicting with the operation of cable terminal devices and VCRs. Nonetheless, if it is decided to use the VHF frequencies for ATV, we propose to avoid the allotment of both Channels 3 and 4 within the same community wherever possible.

45. *TV Channel 6 Allotments.* If we decide to use the VHF channels for ATV, we will need to protect against possible interference from TV channel 6 operations to FM radio service on FM channel 253 and to TV channel 6 from FM radio service on noncommercial educational FM channels 201-220. To avoid situations where such interference could arise, we propose to make ATV allotments to TV channel 6 only where there is no other readily available allotment opportunity that would meet the minimum spacing requirements. We propose to apply an appropriate standard similar to that currently specified in the rules to protect against interference between NTSC Channel 6 and FM radio.[50] We note the sample ATV Table set forth herein does not use channel 6 for any ATV allotments.

46. *Land Mobile Sharing Channels.* We also need to protect against possible interference between ATV stations and land mobile operations on TV broadcast frequencies in certain areas. The rules authorize land mobile sharing operations on frequencies in the range of UHF channels 14-20 in 13 urbanized areas, the Gulf of Mexico offshore region and Hawaii.[51] Because ATV stations are expected to operate with 10 dB less power than NTSC stations, we

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[47] *See Order/FNPRM, supra*, at para 39.

[48] *Id.*, at para 40. In particular, we stated that we will continue to permit a LPTV station displaced by a full-service station to apply for a suitable replacement channel in the same area without being subject to competing applications. We further indicated that we will continue our present policy of permitting LPTV stations to operate until a displacing ATV station is operational. We next stated that we will permit LPTV stations to migrate to vacant NTSC channels, including vacant reserved noncommercial channels. We also stated that we would continue to allow LPTV and TV translator stations to file non-window displacement relief applications to change their operating parameters to cure interference to an ATV station. Finally, we tentatively agreed with commenting parties who suggested that certain specific NTSC interference protection rules could be re-evaluated to afford low-power interests some relief. We indicated that we plan to initiate a separate proceeding to consider such changes. *Id.*, at para. 45.

[49] Island Broadcasting (Island), the licensee of three low power TV stations operating in the New York City metropolitan area and on Long Island, in a recent letter to the Commission, states that it may be possible to provide an ATV channel for all of the existing full service TV stations in the New York market without displacing any of the existing LPTV/translator stations in the area. Island includes an illustrative ATV channel allotment table for the New York City area that would not use any of the existing LPTV and TV translator channels. Where feasible, a number of Island's proposals were incorporated in preparing the sample ATV Table of Allotments proposed herein.

[50] The rules regulating TV channel 6 and FM radio interference are set forth in 47 C.F.R. 73.207(c), 73.525 and 73.610(f). We note that TV channel 6 is restricted with respect to the IF separation to FM channel 253 (Section 73.610(f) of the rules). Commercial FM stations on channel 253 and noncommercial educational FM stations on FM channels 201-220 must protect TV channel 6. There are no restrictions on new TV channel 6 stations or changes with respect to FM channels 201-220.

[51] *See* 47 C.F.R. Section 2.106, Notes NG66, NG114 and NG127. The 13 urbanized areas where UHF channels may be used for land mobile operations and the channels set aside for such operations in those areas are:

| | TV Channel |
|---|---|
| New York-Northeastern New Jersey | 14, 15 |
| Los Angeles | 14, 16, 20 |
| Chicago-Northwestern Indiana | 14, 15 |

believe we can allow ATV stations to be located somewhat closer to land mobile operations than is permitted under our current policy.[52] Generally, we believe that it would be possible to allow ATV stations to operate at co-channel and adjacent channel spacings to the city-center of land mobile operations as close as 250 km (155 miles) and 176 km (110 miles), respectively. We request comment on whether these shorter spacing standards would adequately protect against interference between land mobile operations and ATV stations. We also invite interested parties to submit proposals for alternative minimum spacing requirements for ATV and land mobile stations.

47. All but one of the allotments on the draft ATV Table would comply with the proposed 155 mile co-channel spacing requirement between ATV allotments and land mobile operations. That is, only one of the ATV allotments on this Table would be short-spaced with respect to co-channel land mobile operations. The draft Table does, however, include five cases where ATV allotments would be located at distances less than 110 miles from the city-center of an adjacent channel land mobile system.[53] In order to achieve full accommodation of all existing TV broadcasters, it may be necessary to make special accommodations in the few situations where short-spacing is necessary between ATV allotments and land mobile service. Such accommodations could take the form of conditions on either ATV or land mobile operations in the affected areas. We request comment and information regarding the specific conditions to be applied in such types of cases and the manner in which such conditions should be applied to achieve an appropriate balance between ATV and land mobile interests.

48. In the case of Detroit and Cleveland, our existing border agreements with Canada preclude activation of land mobile stations on UHF channels in those markets. It also appears that it would further our full accommodation and service area goals to use the land mobile reserved channels in these markets for ATV. Accordingly, we are proposing to make Channels 15 and 16 in Detroit and Channels 14 and 15 in Cleveland, which are now reserved for land mobile use, available for allotment as ATV channels.

| | |
|---|---|
| Philadelphia, PA-New Jersey | 19, 20 |
| Detroit, MI | 15, 16 |
| San Francisco-Oakland, CA | 16, 17 |
| Boston, MA | 14, 16 |
| Washington, DC-Maryland-Virginia | 17, 18 |
| Pittsburgh, PA | 14, 18 |
| Cleveland, OH | 14, 15 |
| Miami, FL | 14 |
| Houston, TX | 17 |
| Dallas, TX | 16 |

[52] Currently, the Commission's practice is to evaluate petitions for rule making requesting new television allotments on the same channel as, or first adjacent channel to, a channel used in a nearby area for land mobile service on a case-by-case basis. In these case-by-case evaluations, spacing standards derived from policy statements in Docket No. 18261 are used. The transmitter site of a new TV station must be at least 212 miles from the city-center of a co-channel land mobile operation, and at least 140 miles from the city-center of an adjacent channel land mobile operation.

[53] These five cases are shown in Section II of Appendix D.

**International Coordination**

49. We have initiated coordination activities with both the Canadian and Mexican governments for proposed ATV allotments in the border areas. We expect to address coordination arrangements with these governments for ATV allotments in the border areas in a time frame consistent with our allotment and assignment schedule.

## ATV TABLE OF ALLOTMENTS

50. *Allotment Computer Software.* The development of an ATV Table of Allotments that attempts to optimize and balance the various policy objectives and proposals discussed above is a large and complex task. To handle this task, the FCC staff has developed ATV allotment computer software that incorporates an optimization methodology known as "simulated annealing."[54] This methodology employs a system of penalties that attach to conditions that fall short of specified objectives. The simulated annealing method seeks to minimize the sum of these penalties, or "costs," to achieve an optimum condition.

51. In developing the ATV allotment software, the staff was aware that there may be many instances where the allotment of channels in specific local situations can best be resolved on a case-by-case basis. Our allotment software therefore is able to merge specific local designs into complete tables and, where necessary, make necessary changes in other allotments to preserve a balance of the specified policy considerations. This capability will allow us to incorporate allotment/pairing agreements that broadcasters may reach in any negotiated settlements.[55]

52. *Proposed Allotment Table.* A proposed "first draft" ATV Table is presented in Appendix D. This Table shows possible ATV allotments for all existing U.S. TV transmitter sites. It is intended for the purpose of enabling interested parties to evaluate how the planning principles proposed herein would be applied to generate an ATV Table of Allotments. We emphasize that the "first draft" ATV Table may differ significantly from the final ATV Table, depending on which principles are ultimately used to generate the table, which ATV system is ultimately

[54] See David S. Johnson, Cecilia R. Aragon, Lyle A. McGeoch and Catherine Schevon, "Optimization by Simulated Annealing: An Experimental Evaluation, Part II (Graph Coloring and Number Partitioning)," *Operations Research*, Vol. 39, May-June 1991. In addition to the simulated annealing software, the staff has obtained software that incorporates a method known as "La Grangian Relaxation." This method and its software implementation were developed by Decision-Science Applications, Inc. (DSA) under contract to the FCC. The DSA ATV allotment software is an extension of earlier work by DSA that produced the computer software used by the FCC to develop new FM radio allotments in MM Docket No. 80-90. The DSA software complements the simulated annealing software, and partial allotment solutions developed through either software package can be used in the other so that the two packages can be used together.

[55] It may not be possible to incorporate the allotments specified in a given local agreement into the overall Table and meet the specified policy criteria. For this reason, all negotiated allotment/pairing agreements submitted by broadcasters will be carefully reviewed and evaluated by this Commission.

selected by the Commission, and the results of any broadcaster negotiated settlements. The results of the "first draft" ATV Table are discussed below.

53. Full Accommodation. The proposed Table provides for full accommodation of all existing broadcasters.[56] [57] The Table proposes 1793 new ATV allotments in 881 communities in the continental U.S.[58] This would provide a second ATV channel for all eligible broadcasters as defined in the *Order/FNPRM*.[59] [60] We therefore believe this Table meets our primary objective of full accommodation.

54. *ATV Service Areas.* The proposed Table also maximizes the potential service areas of the new ATV stations. The great majority of ATV allotments are spaced beyond the minimum 125 mile ATV-to-ATV and 115 mile ATV-to-NTSC spacing distances the system proponents claim to need, and we are proposing, to provide service areas equivalent to those of NTSC stations spaced at the current minimum distances. In fact, 80 percent of all proposed ATV allotments would be spaced at distances greater than the existing NTSC minimum spacing requirements, *i.e.*, 250 km (155 miles). Only eight percent (138 ATV allotments) of the total proposed ATV allotments do not meet the proposed minimum co-channel spacing requirements. Many of those allotments would be short-spaced by only a few miles.[61] In addition, the minimum short-spacing distances identified in the Table, 107.3 miles for ATV-to-ATV and 97.1 for ATV-to-NTSC, appear adequate to enable stations to provide a reasonable range of service in the affected direction. The proposed Table also minimizes the number of adjacent channel allotments that are spaced at distances of more than five miles and less than 55 miles. Only 228 adjacent channel spacings, or about 12 percent, would be within the 5 to 55 mile range.

55. *Use of UHF Channels.* Consistent with our proposed objective to use UHF frequencies only, all but 17 of the proposed new ATV allotments would be on UHF frequencies. This represents over 99 percent of the total proposed ATV allotments. Further, we believe it may be feasible to develop a transition scenario that would permit the conversion of these few cases to ATV operation in the UHF band. For example, in all 17 cases, UHF frequencies are allocated to those communities for NTSC service. These NTSC UHF frequencies generally would meet our proposed minimum ATV spacing and could be converted from NTSC operation to ATV operation.

56. *ATV Allotment Preference.* The proposed ATV Table also meets our ATV preference objective. Of the 107 co-channel shortspaced cases, only 14 would be between proposed new ATV allotments; the remainder would be between proposed ATV and existing NTSC allotments. Of the 228 ATV allotments that do not meet the adjacent channel requirement, only four would involve ATV-to-ATV spacings. Accordingly, we believe that most ATV service area concerns would be eliminated or minimized after the transition period.

## PROCEDURAL MATTERS

57. This action is being taken pursuant to authority contained in Sections 4(i), 7, 301, 302, 303 and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157, 301, 302, 303 and 307. This is a non-restricted notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules. See generally 47 CFR Sections 1.1202, 1.1203, and 1.1206(a).

58. *Initial Regulatory Flexibility Analysis.* As required by Section 603 of the Regulatory Flexibility Act, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the expected impact on small entities of the proposals suggested in this document. The IRFA is set forth in Appendix C. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments on the rest of the Further Notice, but they must have a

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[56] The single exception is in Puerto Rico, where more than half the TV broadcasting channels are already allotted (34 channels are operating or have been awarded construction permits on an island whose size does not normally permit frequency reuse. There are only 67 channels in the TV broadcasting bands). In developing the proposed allotments for Puerto Rico, we gave first priority to the operating stations, as proposed in the *Order/FNPRM*. *See Order/FNPRM, supra*, at para. 9. This leaves a small number of eligible stations now with only construction permit status. Of the latter, only Fajardo Channel 34 is in a multi-station community. We therefore chose to provide Fajardo with only two ATV allotments for the three stations there. In making this choice, we also considered that Fajardo is at the east end of the Island, which affords the best chance of duplicating a west-end ATV channel through application of case-by-case engineering analysis.

[57] We also note that some of the channels specified in the proposed table are not fully compliant with the existing U.S.-Mexican agreement. For full compliance, a number of ATV stations along the border would have to be sited somewhat north of tower sites now in use. The following list explains those particular situations. *San Diego, CA:* This community has stations, two at a site northwest relative to the other four. ATV channels have been listed in the allotment table for San Diego, but all of these must be near the northwestern site for compatibility with the Mexican agreement. *El Paso, Texas:* This community has eight stations, five of which are allotted ATV channels which may be sited on or near existing towers. The remaining three El Paso ATV allotments would have to broadcast from sites farther north of the border to comply with UHF taboo restrictions in the U.S. Mexican agreement. *Laredo, Texas:* This community has three stations, one of which would have to broadcast from a tower north of current towers. *Brownsville, Texas:* Of the six stations along the Rio Grande near Brownsville (serving the communities of McAllen, Harlingen, Weslaco and Brownsville), four may use their ATV assignment at or near the towers currently in use. We will work with the Mexican government to clarify the status of ATV allotments in the above areas.

[58] The proposed ATV Table also includes allotments for Alaska, Hawaii, Puerto Rico and the Virgin Islands. With these additional allotments, the Table provides a total of 1886 allotments in 914 communities.

[59] See *Order/FNPRM*, at para. 8. The proposed Table provides facilities for all eligible parties as of October 24, 1991.

[60] The proposed ATV Table also reflects the general policies for noncommercial stations stated in the *Order/FNPRM*. The proposed ATV Table provides ATV allotments for all existing noncommercial stations and 170 currently vacant NTSC noncommercial allotments. With these 170 allotments there would be ATV channels for about half of the approximately 350 currently vacant non-commercial NTSC allotments.

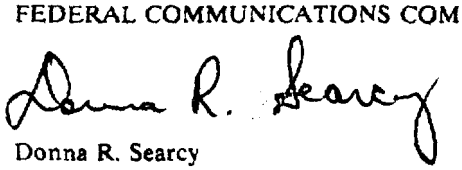
[61] The second section of Appendix D shows the short-spaced co-channel allotments. It also shows adjacent channel allotments that are within 5 to 55 miles of an adjacent channel.

separate and distinct heading designating them as responses to the Initial Regulatory Flexibility Analysis. The Secretary shall send a copy of this Further Notice of Proposed Rule Making, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with paragraph 603(a) of the Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164, 5 U.S.C. Section 601 *et seq* (1981).

59. *Submission of Comments.* Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. Sections 1.415 and 1.419, interested parties may file comments on or before **October 13, 1992** and reply comments on or before **November 12, 1992.** To file formally in this proceeding, you must file an original and five copies of all comments, reply comments, and supporting comments. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus nine copies. You should send comments and reply comments to Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the Dockets Reference Room of the Federal Communications Commission, 1919 M Street, N.W., Washington, D.C. 20554.

60. For further information regarding this Notice of Proposed Rule Making, contact Alan Stillwell (202-632-7060) or Robert Eckert (202-653-8163), Office of Engineering and Technology, or Gordon Godfrey (202-632-9660), Mass Media Bureau.

FEDERAL COMMUNICATIONS COMMISSION



Donna R. Searcy
Secretary

## APPENDIX A
## Estimates of HDTV Service Areas

The proponents of the HDTV systems being considered by the FCC's Advisory Committee on Advanced Television Service provided estimates of the range of the service areas of their systems under various interference conditions in their system description documentation. The analyses that generated these estimates were based on the assumption that the desired ATV service area will be the same as the Grade B contour of a NTSC UHF station operating at full authorized power (37 dBk) and a "typical" effective antenna height of 1200 feet above average terrain and that the Grade B coverage of such a station is 56 miles. The proponents assume that ATV to NTSC interference will be the same as that which occurs between typical co-channel NTSC UHF stations at the minimum spacing distance of 155 miles (the interference results in a 15 mile reduction of service range in the direction of the interfering station). The estimates of service area range are:*

| | Zenith/ AT&T | GI/ ATVA** | ATRC | MIT/ ATVA |
|---|---|---|---|---|
| Noise Limited (miles) | 56 | 56 | 56 | n/a |
| Co-Channel Interference | | | | |
| ATV-NTSC Spacing | | | | |
| 100 miles- | | 41 | 50 | |
| 112 miles- | 45 | | 54 | |
| 115 miles- | | 45 | 55 | |
| 128 miles- | | 52 | | |
| ATV-ATV Spacing | | | | |
| 125 miles- | 52 | 51 | 51 | |

* Blank entries appear where the proponent did not provide estimates.

** System operating in the 32 QAM mode.

APPENDIX B
SYSTEM INDEPENDENT PLANNING FACTORS
RECOMMENDED BY THE ADVISORY COMMITTEE
(Interim Estimates)

| Planning Factor | Low VHF | High VHF | UHF |
|---|---|---|---|
| Geometric mean frequency (MHz) | 69 | 194 | 615 |
| Dipole factor (dBm-dBu) dB ($K_d$) | -111.8 | -120.8 | -130.8 |
| Thermal noise (dBm) ($N_t$) | -106.2 | -106.2 | -106.2 |
| Antenna Gain (dB) (G) | 4 | 6 | 10 |
| Downlead line loss for 50 of coax (dB) (L) | 1 | 2 | 4 |
| Front-to-back ratio (dB) (ratio of forward gain to maximum response over rear 180° | 10* | 12* | 14* |
| Receiver noise figure (dB) ($N_R$) | 5** | 5** | 10** |
| Time probability factor for 90% availability (dB) (dT) | | | *** |
| Location probability for (dL) 50% availability (dB) | 0 | 0 | 0 |

* For the receiving antenna manufacturer's objectives the values are 14, 16, and 20.

** Possible changes in the VHF figures are still under consideration.

*** The time probability factor is defined as the difference F(50,10) minus f(50,50), where these two values are determined from the FCC charts in Section 73.699. This factor is a function of the distance between the transmitting and receiving antennas.

See "Fifth Interim Report of the Planning Subcommittee of the FCC Advisory Committee on Advanced Television Service," March, 1992

## APPENDIX C
## INITIAL REGULATORY FLEXIBILITY ANALYSIS

Reason for Action

In this rule making action the Commission presents proposals for the policies, procedures and technical criteria that it will use in allotting channels for broadcast ATV service.

Objectives

The objective of this action is to obtain comment and information that will assist the Commission in allotting ATV channels. The Commission's objective is to allot ATV channels in a manner that is most efficient for broadcasters and the public and least disruptive to broadcast television service during the period of transition from NTSC to ATV service.

Legal Basis

The proposed action is authorized under Sections 4(i), 7, 301, 302, 303 and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157, 301, 302, 303 and 307.

Reporting, Recordkeeping and Other Compliance Requirements

The proposals set forth in this action would involve no changes to reporting, recordkeeping and other compliance requirements beyond what is already required under the current regulations.

Federal Rules Which Overlap, Duplicate or Conflict With These Rules

None.

Description, Potential Impact and Number of Small Entities Involved

The ATV Table of Allotments that will ultimately be developed through the series of activities beginning with this action will affect all of the 1716 commercial and noncommercial broadcast television stations eligible for an ATV channel in the initial transition phase. Many of these stations are small entities. It is expected that these allotments will constitute the population of channels on which broadcasters will operate ATV service in the future. The individual ATV channels that appear on the final Table may not all offer the potential for the same degree of geographic coverage broadcasters will seek to serve. Allotment of these channels is therefore expected to be very important to the broadcast community. All of the affected stations will have to obtain new transmission facilities and, to a varying extent, production equipment to operate on the new ATV channels. The cost of equipment to operate on these new channels is expected to

vary from $750,000 upwards to $10 million. The actual cost of equipment is expected to vary in accordance with the degree to which the station becomes involved in ATV programming and origination.

Any Significant Alternatives Minimizing the Impact on Small Entities Consistent with Stated Objectives

The process of allotting the ATV channels is an optimization task that offers a great number of possible alternative "mixes" of channel allotments for each community. In evaluating the merits of allotment alternatives, the Commission intends to make every effort to accommodate the needs and concerns of all affected parties. The ATV Table of Allotments proposed herein is a "first draft" intended to provide broadcasters with a view of how channels might be allotted across the individual TV markets. We fully expect that the final Table that is adopted will contain many revisions of the allotments proposed herein.

## APPENDIX D

Section I of this Appendix presents a sample ATV Table of Alotments. This table shows proposed ATV allotments for all existing U.S. TV transmitter sites. It is intended for the purpose of enabling interested parties to evaluate how the proposed planning principles would be applied to generate an ATV Table of Allotments. We emphasize that this table may differ significantly from the final ATV Table, depending on which principles are ultimately used to generate the table, which ATV system is ultimately selected by the Commission, and the results of any broadcaster negotiated settlements.

Section II identifies proposed ATV allotments on the ATV Table that do not meet the proposed minimum spacing requirements.

### Section I - Proposed ATV Table of Allotments

Note: The channels are listed in numerical order; no pairing of NTSC and ATV channels is implied.

**SAMPLE TABLE**

**Alaska**

| Community | ATV Channel Number |
|---|---|
| Anchorage | |
| Site 1 | 46, 52, 53 |
| Site 2 | 50, 62, 69 |
| Site 3 | 42 |
| Site 4 | 67 |
| Bethel | 65 |
| Dillingham | 38 |
| Fairbanks | 28, 52, 69 |
| Juneau | 61, 66 |
| Ketchikan | 34 |
| North Pole | 54 |
| Sitka | 18 |

**Alabama**

| Community | ATV Channel Number |
|---|---|
| Anniston | 27 |
| Birmingham | 46, 50, 53, 58, 63, 69 |
| Demopolis | 62 |
| Dothan | |
| Site 1 | 63, 69 |
| Site 2 | 30 |
| Dozier | 36 |
| Florence | 38, 52, 67 |

*** SAMPLE TABLE ***

**Alabama (Continued)**

| Community | ATV Channel Number |
|---|---|
| Gadsden | |
| Site 1 | 16 |
| Site 2 | 24 |
| Homewood | 35 |
| Huntsville | |
| Site 1 | 34, 41, 49, 64 |
| Site 2 | 51 |
| Louisville | 15 |
| Mobile | |
| Site 1 | 29 |
| Site 2 | 17, 27 |
| Site 3 | 55, 61 |
| Montgomery | |
| Site 1 | 57 |
| Site 2 | 19, 29 |
| Site 3 | 47 |
| Site 4 | 49 |
| Mount Cheaha | 55 |
| Opelika | 51 |
| Ozark | 41 |
| Selma | 52 |
| Troy | 65 |
| Tuscaloosa | |
| Site 1 | 61 |
| Site 2 | 28 |
| Tuskegee | 23 |

**Arkansas**

| Community | ATV Channel Number |
|---|---|
| Arkadelphia | 34 |
| El Dorado | |
| Site 1 | 67 |
| Site 2 | 59 |
| Fayetteville | |
| Site 1 | 68 |
| Site 2 | 56 |
| Fort Smith | |
| Site 1 | 43 |
| Site 2 | 54 |
| Site 3 | 57 |
| Harrison | 45 |
| Hot Springs | |
| Site 1 | 55 |
| Site 2 | 66 |

*** SAMPLE TABLE ***

**Arkansas (continued)**

| Community | ATV Channel Number |
|---|---|
| Jonesboro | |
| Site 1 | 26 |
| Site 2 | 20 |
| Site 3 | 51 |
| Little Rock | |
| Site 1 | 30, 60, 61 |
| Site 2 | 32, 58 |
| Site 3 | 41 |
| Site 4 | 49 |
| Mountain View | 39 |
| Newark | 44 |
| Pine Bluff | |
| Site 1 | 21 |
| Site 2 | 69 |
| Rogers | 50 |
| Russellville | 47 |

**Arizona**

| Community | ATV Channel Number |
|---|---|
| Ajo | 64 |
| Douglas | 36 |
| Flagstaff | |
| Site 1 | 22, 56 |
| Site 2 | 38 |
| Site 3 | 28, 68 |
| Globe | 55 |
| Green Valley | 39 |
| Holbrook | 20 |
| Kingman | |
| Site 1 | 29 |
| Site 2 | 65 |
| McNary | 54 |
| Mesa | 57 |
| Nogales | |
| Site 1 | 66 |
| Site 2 | 32 |
| Page | 44 |
| Parker | 23 |
| Phoenix | |
| Site 1 | 24, 29, 36, 42, 43, 52, 58, 59, 63 |
| Site 2 | 67 |
| Prescott | |
| Site 1 | 48 |
| Site 2 | 41 |

*** SAMPLE TABLE ***

## Arizona (continued)

| Community | ATV Channel Number |
|---|---|
| Tolleson | 30 |
| Tucson | |
| Site 1 | 23, 49, 65, 68 |
| Site 2 | 60, 62 |
| Site 3 | 44 |
| Yuma | |
| Site 1 | 22, 26 |
| Site 2 | 69 |

## California

| Community | ATV Channel Number |
|---|---|
| Anaheim | 53 |
| Arcata | 14 |
| Avalon | 64 |
| Bakersfield | |
| Site 1 | 44, 54, 67 |
| Site 2 | 27, 36 |
| Barstow | 41 |
| Big Bear Lake | 51 |
| Bishop | 40 |
| Ceres | 22 |
| Chico | |
| Site 1 | 60 |
| Site 2 | 48 |
| Site 3 | 56 |
| Clovis | 41 |
| Coalinga | 42 |
| Concord | 43 |
| Corona | 26 |
| Cotati | 23 |
| El Centro | |
| Site 1 | 40 |
| Site 2 | 58 |
| Eureka | |
| Site 1 | 19, 20, 43 |
| Site 2 | 38 |
| Fort Bragg | 41 |
| Fresno | |
| Site 1 | 34, 69 |
| Site 2 | 32, 66 |
| Site 3 | 64 |
| Hanford | 57 |
| Huntington Beach | 39 |
| Los Angeles | 8, 25, 31, 32, 35, 38, 47, 48, 60, 65, 66, 69 |
| Merced | 63 |

*** SAMPLE TABLE ***

**California (continued)**

| Community | ATV Channel Number |
|---|---|
| Modesto | 50 |
| Monterey | |
| Site 1 | 52 |
| Site 2 | 31 |
| Novato | 19 |
| Oakland | 45 |
| Ontario | 10 |
| Oroville | 63 |
| Oxnard | 49 |
| Palm Springs | 54, 68 |
| Paradise | 69 |
| Porterville | 50 |
| Rancho Palos Verdes | 36 |
| Redding | 34, 54 |
| Riverside | 15 |
| Sacramento | |
| Site 1 | 24, 25, 35, 47, 55, 62 |
| Site 2 | 14 |
| Salinas | |
| Site 1 | 28 |
| Site 2 | 58 |
| San Bernardino | |
| Site 1 | 43, 55 |
| Site 2 | 19 |
| San Diego | |
| Site 1 | 9, 55, 63, 65 |
| Site 2 | 16, 25 |
| San Francisco | 21, 27, 29, 30, 34, 39, 51, 56, 57, 61 |
| San Jose | |
| Site 1 | 49, 53, 69 |
| Site 2 | 12, 63 |
| San Luis Obispo | 19, 56, 60 |
| San Mateo | 59 |
| Sanger | 38 |
| Santa Ana | 61 |
| Santa Barbara | |
| Site 1 | 24, 41 |
| Site 2 | 18 |
| Santa Maria | 30 |
| Santa Rosa | 65 |
| Stockton | |
| Site 1 | 46, 67 |
| Site 2 | 41 |
| Susanville | 51 |
| Twentynine Palms | 46 |
| Vallejo | 33 |
| Ventura | 59 |

*** SAMPLE TABLE ***

**California (continued)**

| Community | ATV Channel Number |
|---|---|
| Visalia | 15, 62 |
| Watsonville | 40 |

**Colorado**

| Community | ATV Channel Number |
|---|---|
| Alamosa | 38 |
| Boulder | 39 |
| Broomfield | 44 |
| Castle Rock | 64 |
| Colorado Springs | 16, 23, 58 |
| Craig | 32 |
| Denver | |
| Site 1 | 17, 28, 30, 34, 35, 46, 48, 66 |
| Site 2 | 55 |
| Site 3 | 57 |
| Durango | 25, 55 |
| Fort Collins | 56 |
| Glenwood Springs | |
| Site 1 | 54 |
| Site 2 | 68 |
| Grand Junction | |
| Site 1 | 57, 62 |
| Site 2 | 28 |
| Gunnison | 49 |
| La Junta | 68 |
| Lamar | 19 |
| Leadville | 27 |
| Longmont | 69 |
| Montrose | 36, 60 |
| Pueblo | 33, 63 |
| Steamboat Springs | 58 |
| Sterling | |
| Site 1 | 15 |
| Site 2 | 43 |
| Trinidad | 25 |

**Connecticut**

| Community | ATV Channel Number |
|---|---|
| Bridgeport | |
| Site 1 | 39 |
| Site 2 | 12 |
| Hartford | 29, 32, 35, 63 |
| New Britain | 34 |

*** SAMPLE TABLE ***

**Connecticut (continued)**

| Community | ATV Channel Number |
|---|---|
| New Haven | |
| Site 1 | 46 |
| Site 2 | 52 |
| Site 3 | 17 |
| New London | 50 |
| Norwich | 9 |
| Waterbury | 60 |

**District of Columbia**

| Community | ATV Channel Number |
|---|---|
| Washington | 29, 30, 34, 35, 36, 48, 57, 59 |

**Delaware**

| Community | ATV Channel Number |
|---|---|
| Seaford | 33 |
| Wilmington | |
| Site 1 | 36 |
| Site 2 | 68 |

**Florida**

| Community | ATV Channel Number |
|---|---|
| Boca Raton | 50 |
| Bradenton | 42 |
| Bunnell | 38 |
| Cape Coral | 24 |
| Clearwater | 25 |
| Clermont | 23 |
| Cocoa | 33, 47 |
| Daytona Beach | |
| Site 1 | 69 |
| Site 2 | 54 |
| Fort Lauderdale | 40 |
| Fort Myers | 41, 54, 55 |
| Fort Pierce | |
| Site 1 | 48 |
| Site 2 | 22 |
| Fort Walton Beach | |
| Site 1 | 38 |
| Site 2 | 31 |
| Site 3 | 59 |

*** SAMPLE TABLE ***

**Florida (continued)**

| Community | ATV Channel Number |
|---|---|
| Gainesville | |
| Site 1 | 34 |
| Site 2 | 32 |
| High Springs | 68 |
| Hollywood | 19 |
| Inverness | 41 |
| Islamorada | 21 |
| Jacksonville | 16, 19, 29, 48, 50, 66, 67 |
| Key West | |
| Site 1 | 34 |
| Site 2 | 36 |
| Site 3 | 58 |
| Lake Worth | 66 |
| Lakeland | 53 |
| Leesburg | |
| Site 1 | 49 |
| Site 2 | 21 |
| Live Oak | 56 |
| Madison | 35 |
| Marathon | 30 |
| Marianna | 66 |
| Melbourne | |
| Site 1 | 39 |
| Site 2 | 46 |
| Miami | |
| Site 1 | 16, 18, 31, 32, 38, 44, 47, 52, 53 |
| Site 2 | 56 |
| Site 3 | 60 |
| Naples | 43, 68 |
| New Smyrna Beach | 40 |
| Ocala | 39 |
| Orange Park | 42 |
| Orlando | |
| Site 1 | 30, 31, 36, 61, 62 |
| Site 2 | 14 |
| Palatka | 44 |
| Palm Beach | 57 |
| Panama City | |
| Site 1 | 22, 51 |
| Site 2 | 39 |
| Site 3 | 62 |
| Panama City Beach | 64 |
| Pensacola | |
| Site 1 | 48, 66, 68 |
| Site 2 | 40 |
| Sarasota | 34 |

*** SAMPLE TABLE ***

**Florida (continued)**

| Community | ATV Channel Number |
|---|---|
| St. Petersburg | |
| Site 1 | 58, 67 |
| Site 2 | 48 |
| Tallahassee | |
| Site 1 | 17, 45 |
| Site 2 | 33 |
| Tampa | 17, 19, 29, 57, 59, 60 |
| Tequesta | 64 |
| Tice | 65 |
| Venice | 63 |
| West Palm Beach | 27, 28, 58, 59 |

**Georgia**

| Community | ATV Channel Number |
|---|---|
| Albany | 19, 52 |
| Athens | |
| Site 1 | 22 |
| Site 2 | 49 |
| Atlanta | 15, 26, 39, 42, 43, 47, 52, 65, 67 |
| Augusta | 23, 48, 62, 66 |
| Bainbridge | 23 |
| Baxley | 51 |
| Brunswick | 54 |
| Chatsworth | 50 |
| Cochran | 33 |
| Columbus | |
| Site 1 | 48, 59 |
| Site 2 | 61, 62 |
| Site 3 | 56 |
| Cordele | 68 |
| Dalton | 29 |
| Dawson | 21 |
| Macon | 16, 35, 45, 53 |
| Monroe | 19 |
| Pelham | 42 |
| Perry | 50 |
| Rome | 33 |
| Savannah | |
| Site 1 | 15, 56, 65 |
| Site 2 | 32 |
| Thomasville | 65 |
| Toccoa | 60 |
| Valdosta | 26 |
| Vidalia | 38 |
| Waycross | 62 |
| Wrens | 44 |